

# EXHIBIT A

**JERRY A. WACHTEL, C.P.E.**

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## Curriculum Vitae

### **BACKGROUND AND EXPERTISE**

The Veridian Group was established in 1982 to provide consulting services to Government, non-profit and corporate clients in areas of human factors and ergonomics, including: human performance; visibility and conspicuity; hazards and warnings; simulation; training and assessment; expectancy and situation awareness, distraction and attention; roadway design and traffic control devices; and positive guidance concepts. Mr. Wachtel's background includes more than 30 years of experience in research, project management, and consulting at all levels of Government and in private industry.

### **EXPERT WITNESS QUALIFICATION.**

Mr. Wachtel has never been denied qualification as an expert witness in human factors, ergonomics, or engineering psychology. He has been retained as an expert in Alaska, Arkansas, California, The District of Columbia, Montana, New Jersey, Oregon, Pennsylvania, Virginia, and Washington.

### **PARTIAL CLIENT LIST.**

In addition to providing services to numerous law firms, our clients include

Government: U.S. Department of Transportation; U.S. Nuclear Regulatory Commission; County of Fairfax, VA; Cities of San Francisco, Baltimore, Seattle, Portland, Berkeley, and others; LA Department of Highways; MD State Highway Administration; NJ Department of Law and Public Safety; PA Department of Transportation; Port Authority of NY and NJ (PANY); Atlantic City Expressway Authority; League of Minnesota Cities; Association of Bay Area Governments (ABAG); California Department of Transportation (CALTRANS).

Corporate: AMFS, Inc.; Arco Chemical Co.; Atari Games Corp.; Drive Square, LLC; Electronic Learning Facilitators, Inc.; Hyperion Technologies, Inc.; I-Sim Corp.; Lamar Outdoor, Inc.; Parallax, Inc.; Positive Guidance Applications, Inc.; SAIC; Scientex Corp.; Systems Technology, Inc.; Talisman-International, LLC; Time-Warner Interactive; TransAnalytics, LLC; Vega Vista, Inc.

Educational and Non-Profit: Fondation MAIF, Paris, France; International Atomic Energy Agency (IAEA); National Safety Council; Sister Kenney Institute; Stein Gerontological Institute; University of California, Berkeley; University of Miami Center on Human Factors and Aging; University of Minnesota; Washington University of St. Louis; American Association of State Highway and Transportation Officials (AASHTO); Sharp Memorial Hospital Rehabilitation Center; Outdoor Advertising Association of America (OAAA); National Cooperative Highway Research Program (NCHRP); Scenic America.

**EMPLOYMENT HISTORY:****DRIVING LAB, LLC**

Co-Founder and Partner, 2007-Present

Driving Lab is a start-up company formed to address the growing need for a practical and valid assessment of driving impairments due to age, injury, or illness. The company is developing a line of standardized, state-of-the-art, affordable driving simulators, complete with proven assessment and training scenarios and protocols, for use in clinical, research, and DMV applications.

**U.S. NUCLEAR REGULATORY COMMISSION, Washington, D.C.**

Senior Engineering Psychologist, Training &amp; Assessment Specialist, 1982-2000

Author of Federal regulations for fidelity and testing requirements for training simulators. Designed, developed and implemented agency-wide program in workplace ergonomics, and wrote policy paper on "Safety Conscious Work Environment." Managed multi-million dollar research programs in areas related to nuclear power plant simulation, training, procedures, and human factors engineering for advanced control rooms. Initiated, developed and defended research areas; developed contract documents and negotiated with offerors; managed all technical and financial aspects of research and technology transfer; explained and defended programs through the public hearing process; and published results. Developed and performed training and procedures reviews, control room design reviews, examination audits, incident response site-visits, simulator certification audits, and power plant staff interviews. Developed and maintained close, cooperative working relationship with industry.

Published and presented technical papers, chaired professional conferences, and served as invited keynote speaker. Appointed Chair, U.S. Technical Advisory Committee to International Standards Organization (ISO) Committee 159, SC6/WG8, Ergonomics of Control Centres. Served as NRC representative to American Nuclear Society committee writing the ANSI standard for nuclear power plant simulators. Conducted classes and workshops on human factors in the nuclear industry for international organizations in England, Norway, Sweden and Slovenia.

**U.S. DEPARTMENT OF TRANSPORTATION, Washington, D.C.**

Research Psychologist, 1973-82.

Developed and staffed a research laboratory using simulators and psycho-physiological recorders to conduct and manage highway safety research related to: accidents under reduced visibility conditions; driver task demands in the presence of roadside distractors; safety and traffic flow at bridge and tunnel entrances; real-time motorist guidance and information systems; adequacy of traffic control devices. Named Laboratory Director in 1980. My research results have been implemented throughout the US and Europe, and have been used as evidence in court cases, including the U.S. Supreme Court. Wrote and presented papers at conferences. Served on international committees concerned with highway safety. Appointed by the Secretary of Transportation to tasks force on Occupational Safety and Health and Transportation System Environmental Design. Chaired the simulation committee of the National Academy of Sciences' Transportation Research Board, and served as Chair of the Board's Human Factors Workshop in Transportation. Served the Human Factors and Ergonomics Society as Alternate Member of the National Committee on Uniform Traffic Control Devices.

GRUMMAN AEROSPACE CORPORATION, Bethpage, New York  
Human Factors Psychologist, 1969-73.

Served as NASA-Apollo Lunar Module (LM) Team Leader for simulation and real-time mission support. Developed and implemented man-in-the-loop simulation tests in support of flight crew training, procedures development, verification and validation, display/control design, and on-board maintenance activities. Supervised all corporate life sciences NASA support functions for Apollo flights including direction of a round-the-clock emergency response team of scientists and engineers, and conduct of post-mission astronaut debriefings. Wrote the human factors sections of corporate post-flight reports to NASA for Apollo missions. Researched the LM crew/computer interface, the results of which led to a reduction of in-flight errors during periods of high task demands. Discovered the problem and evaluated the effects of distance perception illusions experienced by astronauts on the lunar surface, which led to new equipment and procedures to reduce these effects. Wrote technical papers, and served as Grumman's representative to NASA lunar surface operations planning meetings. Consulted on other corporate projects, and contributed to the design of Grumman health care delivery systems and emergency medical treatment devices.

## PROFESSIONAL APPOINTMENTS AND AFFILIATIONS

Fellow, The Human Factors and Ergonomics Society

Member, Technical Groups on Forensics, Surface Transportation, Product Design,  
Visual Performance, Computer Systems, Health Care

Member, National Academy of Sciences, Transportation Research Board

Chair, Subcommittee on Roadside Digital Signage

Member Emeritus and former Chair, Committee on Simulation and Measurement of  
Vehicle and Operator Performance

Member, Committee on User Information Systems

Member, Committee on Vehicle User Characteristics

Chair, Fifteenth and Thirtieth Annual Workshop on Human Factors in Transportation

Member, Human Factors Workshop Planning Committee

Member of the following Scientific and Technical Committees:

Intelligent Transportation System (ITS) America, Committee on Safety and Human Factors.

Society of Automotive Engineers, Committee on Human Factors.

Human Factors Resource Group, An Advisory Body to the National Committee on Uniform  
Traffic Control Devices, Authors of the MUTCD..

Advisory Board, Center on Human Factors and Aging Research - University of Miami School  
of Medicine.

U.S. Technical Advisory Group to International Standards Organization (ISO) TC159  
Ergonomics, and its Subcommittee 4, Ergonomics of Human-System Interaction.

Chair, U.S. Technical Advisory Group to ISO TC159/SC6, Ergonomics of Control Centres.

## **CERTIFICATIONS, HONORS AND AWARDS**

Certified Professional Ergonomist (CPE), Board of Certification in Professional Ergonomics

High Quality Performance Awards, U.S. Nuclear Regulatory Commission.

NASA Apollo Achievement Award for outstanding contributions to manned space flight.

Award for Outstanding Technical Achievement by the Federal Highway Administration for report titled: "Safety and Environmental Design Considerations in the Use of Commercial Electronic Variable Message Signage." (This publication was used as evidence by the Attorney General of the United States in a case heard before the U.S. Supreme Court).

Member of Psi Chi, the National Honor Society in Psychology.

## **EDUCATION.**

Brooklyn College, Brooklyn, NY, B.A., Psychology, 1965

The City University of New York, New York, NY, M.B.A., Engineering/Industrial Psychology, 1969

The Stevens Institute of Technology, Hoboken, NJ, Advanced Graduate Studies in Engineering and Environmental Psychology

The Catholic University of America, Washington, DC, Advanced Graduate Studies in Human Factors and Engineering Psychology

## **COMMUNITY SERVICE.**

President and Member of the Executive Board, Panoramic Hill Association, Berkeley, California.

Member of the Board, Friends of the Havens House, Berkeley, California

Director and Safety Chair, Berkeley Path Wanderers Association

Past President and Chairman, Federal Hill Neighborhood Association, Inc., a 501-C-3 organization representing a community of 3000 listed on the National Register of Historic Places.

Appointed by several Mayors of Baltimore City to membership on planning committees and tasks force, including: City Master Plan for the Year 2000 and Beyond; Downtown Stadium Committee; Key Highway Waterfront Advisory Committee.

**SELECTED PUBLICATIONS, PRESENTATIONS, AND PROFESSIONAL ACTIVITIES.**

Workshop Chair: "Digital Billboards on the Highway – Who's Watching?" 87th Annual Meeting of the Transportation Research Board of The National Academies. Washington, DC, January 2008.

"Programs and Practices to Reduce Simulator Sickness: Lessons Learned from the Field." *Proceedings of the International Conference on Road Safety and Simulation, 2007*. Rome, Italy: University of Roma Tre.

Reviewer: "Changeable Message Sign Displays During Non-Incident, Non-Roadwork Periods." National Cooperative Highway Research Program (NCHRP), Project 20-5, Topic 38-11, July 2007.

Principal Developer – International Standards Organization (ISO) Warning Symbol No. 21482, a symbol to warn the public of radiation dangers, February 2007.  
(<http://www.iaea.org/NewsCenter/News/2007/radiationsymbol.html>)

Reviewer: *Preventing Teen Motor Crashes: Contributions from the Behavioral and Social Sciences: Workshop Report*. Washington, DC: The National Academies, January 2007.

"A Protocol for Avoiding Simulator Sickness." With E. Stern, V. Barth, W. Durfee, M. Rosen, T. Rosenthal, E. Schold-Davis, C. Schaffer, M. Watson, & J. Zola. Paper presented at the Conference on New Approaches to Simulation and the Older Operator, MIT AgeLab & New England University Transportation Center, October 27, 2006.

"Survey of Standards and Practices toward the Reduction of Simulator Sickness." Paper presented at the Conference on New Approaches to Simulation and the Older Operator, MIT AgeLab & New England University Transportation Center, October 27, 2006.

Invited Participant. U.S. Institute for Environmental Conflict Resolution: National Outdoor Advertising Control Program Assessment. Sacramento, California, August 2006. U.S. Department of Transportation, Federal Highway Administration.

Invited Presenter, "Hindsight Bias in Attribution of Crash Causes," Workshop on *Why Crashes Happen: Factors Associated with Crash Causation - Human Factors Insights from In-Depth Investigations*, 85<sup>th</sup> Annual Meeting of the Transportation Research Board, Washington, DC, January, 2006.

"The Use of a Driving Simulator to Assess Senior Driver Performance: Increasing Situational Awareness Through Post-Drive One-on-One Advisement," with M. Romoser, D.L Fisher, R. Mourant, & K. Sizov. *Proceedings of the 3<sup>rd</sup> International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design*. Rockport, Maine: June 27-30, 2005.

Invited Moderator, Human Factors Issues. *The Crossing Zone – A Decade of Progress: Western Regional Safety Grade-Crossing Training Conference*. Organized by Federal Railroad Administration and University of California, Berkeley. May 2005.

"The Potential to Enhance Older Drivers' Critical Driving Skills Through Simulator-Based Advice," with M. Romoser, D.L. Fisher, K.A. Sizov, & R.R. Mourant. In *Driver Behaviour and Training: Vol. II*, L. Dorn, Ed. pp. 105-120. Hampshire, England: Ashgate.

"Safety Challenges Facing Tomorrow's Commercial Drivers and the Role of New Simulation Technology to Meet Them." Proceedings of the *Conference on Future Truck and Bus Safety Research Opportunities*. Washington, DC: Transportation Research Board of the National Academy of Sciences, March 2005.

"Use of a Driving Simulator to Assess Older Adults' Critical Driving Skills," with M. Romoser, D.L. Fisher, R. Mourant, K. Sizov, S. Kennedy, & M. Andra. Paper presented at the 84<sup>th</sup> Annual Meeting of the Transportation Research Board, Washington, DC, January 2005.

"Making Vehicles and Roads Safer for Older Drivers: A Human Factors Approach." Paper presented at the Symposium on Safe Mobility for the Aging, Sacramento, California, November 2004.

"Discriminating Between Brain Injured and Non-Disabled Persons: a PC-Based Interactive Driving Simulator Pilot Project," with E.B. Stern, E. Schold Davis, W.K. Durfee, and T.J. Rosenthal. *Advances in Transportation Studies: An International Journal*, 2004 Special Issue, pp. 67-78

"Driving Simulation in the Clinical Setting: Utility for Testing and Treatment," with P.N. Rosen. *Advances in Transportation Studies: An International Journal*, 2004 Special Issue, pp. 91-96

Invited Panelist, The Santa Monica Crash: Strategies to Reduce Future Occurrences. Joint Conference of the American Society on Aging and the National Council on Aging, April 2004.

Invited Participant, "International Consensus Conference: How to Assess Road Driving Skills and Abilities," Sponsored by U.S. Public Health Service, Centers for Disease Control, December 2003.

"Assessment of Cognitively Impaired Persons Who Wish to Resume Driving." The First STISIM Drive Users Group Meeting, Cranfield University, United Kingdom, September 2003.

"Driver Education for Pre-Teens: A New Approach Toward Reducing Crashes Among Young Novice Drivers." In *Contemporary Ergonomics 2003*, P.T. McCabe (Ed.). London: Taylor & Francis.

"Pilot Study of Driving Simulation with Persons with Brain Injury and Cognitive Deficit," with E.B. Stern, W.K. Durfee, T.J. Rosenthal, and E. Schold Davis. Presented at *World Federation of Occupational Therapy (13<sup>th</sup> World Congress of Occupational Therapists)*, Stockholm, Sweden, 2002.

"Program for Development of a New Warning Sign for Hazardous Radioactive Materials," Consultant's Report Prepared for the International Atomic Energy Agency (IAEA), March 2002.

"Drivers' Responses to Changeable Message Signs of Differing Message Length, and Traffic Conditions," with J.H. Guerrier and D.L. Budenz. In *Contemporary Ergonomics 2002*, P.T. McCabe (Ed.). London: Taylor & Francis, pp 223-228.

“Low Cost Simulation as a Tool to Assess the Driving Ability of Persons with Cognitive Impairments from Brain Injury,” with E.B. Stern, W.K. Durfee, T.J. Rosenthal, and E. Schold Davis. In *Contemporary Ergonomics 2002*, P.T. McCabe (Ed.). London: Taylor & Francis, pp. 229-234.

*Ergonomics and the Prevention and Reduction of Injuries in the Workplace – Office Ergonomics 101-103*. U.S. Nuclear Regulatory Commission BR-0269, 0270, 0271, February 2002.

“Evaluation of a Low-Cost, PC-Based Driving Simulator to Assess Persons with Cognitive Impairments Due to Brain Injury,” with W.K. Durfee, T.J. Rosenthal, E. Schold-Davis and E.B. Stern. *Proceedings of the International Driving Symposium on Human Factors in Driver Assessment, Training and Vehicle Design*, Aspen, Colorado, August 2001, 293-294.

“A Simulator Study of Driver Responses to Changeable Message Signs of Differing Message Length and Format,” with J. Guerrier. *Proceedings of the International Driving Symposium on Human Factors in Driver Assessment, Training and Vehicle Design*, Aspen, Colorado, August 2001, 164-165.

Guest Lecturer. Graduate Class in Ergonomics and Engineering Psychology, San Jose State University, Spring 2001.

Invited Participant, *Federal Motor Carrier Safety Administration Meeting on Research and Technology*. Washington, DC, U.S. Department of Transportation, January 2001.

Invited Participant, “Conference on Partnering for Safety-Human Centered Systems – Operator Fatigue Management.” Tysons Corner, Virginia, U.S. Department of Transportation, August 2000.

“Human Factors Guidance for Control Room Evaluation,” with J. O’Hara, W. Brown, W. Stubler, J. Higgins and J.J. Persensky. In *Proceedings of the IEA 2000/HFES 2000 Congress*, San Diego, California, August 2000, 3-519 – 3-522.

Chair, Technical Session on “Human Factors Engineering Methods in Power Systems.” *IEA 2000/HFES 2000 Congress*, San Diego, California, August 2000.

*Single Point Urban Diamond Intersections in Maryland: A Review and Human Factors Analysis*. Maryland State Highway Administration, Office of Traffic Safety, June 2000.

Invited Participant, *Specialists’ Meeting on “Integrated Information Presentation in Control Rooms and Technical Offices at Nuclear Power Plants.”* Stockholm, Sweden, International Atomic Energy Agency (IAEA), May 2000.

Co-Chair, Workshop on “Signs that Confuse, Signs that Distract – The Impact of Official and Commercial Signs on Driver Behavior and Performance,” with M. Pietrucha. *33<sup>rd</sup> Annual Human Factors in Transportation Workshop*. Washington, DC, Transportation Research Board of the National Research Council, January 2000.

"Interactive Driving Simulation as a Tool for Insight Development and Motivation in a Rehabilitation Setting," with Elin Schold-Davis. Paper presented at *The 8<sup>th</sup> Annual Medicine Meets Virtual Reality Conference*, Newport Beach, California, January 2000.

*The Towson Roundabout: Human Factors Considerations*. Maryland State Highway Administration, Office of Traffic Safety, August 1999.

Chair, Workshop on "Approaches for the Integration of Human Factors into the Upgrading and Refurbishment of Control Rooms." Organization for Economic Cooperation and Development of Europe (OECD). Halden, Norway, August 1999.

Chair, Workshop on "Safety Assessment of Plant Modifications with Special Emphasis on I&C Modernization and HMI Issues." International Atomic Energy Agency (IAEA). Ljubljana, Slovenia, May 1999.

Invited Presenter. *Corporate Traffic Safety Symposium*. Ft. Lauderdale, Florida: National Safety Council, South Florida Chapter, September 1997.

"Innovations in Low-Cost Simulation Technology for the Training and Testing of 'High Risk' Drivers," in *Global Perspectives of Human Factors in Power Generation: Proceedings of the 1977 IEEE Sixth Conference on Human Factors and Power Plants*. New York: Institute of Electrical and Electronic Engineers, June 1997.

Invited Member, Expert Peer Review Panel. *Validation of Truck Driver Simulator for Driver Training, Testing and Licensing*. U.S. Department of Transportation, Office of Motor Carriers, June 1997.

"Applications of Appropriate Simulator Technology for Driver Training, Licensing and Assessment." In *Vision in Vehicles - V*, A.G. Gale, *et al*, Eds. Amsterdam: Elsevier, pp. 3-10, 1996.

"A Comprehensive Evaluation of a Low Cost Driving Simulator for Use in the Training of Police Officers," with J. Berner. Presented at the *International Conference on Traffic and Transport Psychology*, Valencia, Spain, May 1996.

"An Enhanced Commentary Driving Technique for Real-Time Data Collection with Untrained Subjects," with J.H. Guerrier and P. Manivannan. Paper presented at the *International Conference on Traffic and Transport Psychology*, Valencia, Spain, May 1996.

"Human Factors Study of Traffic Control in Construction and Maintenance Zones," Three Working Papers Submitted to the Federal Highway Administration, U.S. Department of Transportation, under Contract No. DTFH61-95-C-00064, 1996.

"Human-System Interface Design Review Guideline, Final Report." *NUREG-0700, Rev. 1*. Washington, DC: U.S. Nuclear Regulatory Commission, June 1996.

"Technology and the Older Traveler." *Second National Forum for Advanced Public Transportation (APTS): New Thinking in Transit Management Concepts*, 8-11. Knoxville: The University of Tennessee Transportation Center, 1996.

"A Brief History of Driving Simulators." *TR News*, Number 179, July-August, pp. 26-27,45, 1995.

"Human Factors in Process Control: Developing Criteria for the Review of Advanced Human-System Interface Designs." *CSERLAC Gateway VI*(4), pp. 10-12, 1995.

"Methodological Issues in the Validation of Complex Human-Machine Systems," with J. O'Hara and W. Stubler. *Proceedings of the Topical Meeting on Computer-Based Human Support Systems: Technology, Methods, Future*. Philadelphia, PA, June 26-29, 1995, pp. 339-344.

*Positive Guidance in Maryland: Guidelines and Case Studies*. Contributing Author and Task Force Leader. Hanover, Maryland: Maryland State Highway Administration, 1995.

"The Importance of Simulation Facilities for the Development of Review Criteria for Advanced Human System Interfaces," with J.M. O'Hara. *Proceedings of the 1994 Simulation Multiconference*, J. Olmos and A. Sharon, Eds., pp. 200-205. San Diego: The Society for Computer Simulation, 1994.

"Development of Comprehensive Human Factors Engineering Guidelines for the Evaluation of Human Systems Interfaces," with J. O'Hara and W. Brown. *Proceedings of the 12th Triennial Congress of the International Ergonomics Association, Volume 5: Ergonomics of the Workplace*, Ontario, Canada: Human Factors Association of Canada, 1994, pp. 407-409.

"Driving Simulators - Serious Tools or Frivolous Toys? - Overview of a Symposium and Panel Discussion." *Proceedings of the Human Factors and Ergonomics Society 37th Annual Meeting*, Seattle: 1993, pp. 600-601, 622-624.

"The State of Practice of Computerized Operating Procedures in the Commercial Nuclear Power Industry," with A.J. Spurgin and P. Moieni. *Proceedings of the Human Factors and Ergonomics Society 37th Annual Meeting*, Seattle: 1993, pp. 1014-1018.

"The Role of New Simulation Technology in a Systematic Approach to Novice Driver Education." Paper presented at the *Working Conference on Novice Driver Education*, Edmonton, Alberta, Canada: April 1993.

"New Technology for an Old Problem: A Report of a Prospective Study to Evaluate a Simulator-Based Approach to Driver Licensing," with R.C. Peck. Paper presented at the 1993 Annual Meeting of the Transportation Research Board, Washington, DC: January 1993.

"An Introduction to Fitness for Duty." Invited paper presented at the 1993 Annual Meeting of the Transportation Research Board, Washington, DC: January 1993.

"Team Skills Training in Nuclear Power Plant Operations," with C.D. Gaddy, pp. 379-396, in Swezey, R.W. and Salas, E. (eds.) - *Teams: Their Training and Performance*. Norwood, N.J., ABLEX Publishing Co., 1992.

"A 'Blue Sky' Approach to the Future of Driver Qualification," with P.W. Nunnenkamp. Invited presentation to the 1992 Driver Licensing and Control Workshop. New Orleans: American Association of Motor Vehicle Administrators, November 1992.

"The Role of Simulators in the Operator Training Environment of the Future." Paper presented at the 2nd International Conference on Training for Operation and Maintenance in the Nuclear Industry, September 23, 1992. Cambridge, England: The Institution of Nuclear Engineers.

*Advanced Control Room Design Review Guidelines: Merging Old and New*, with R. J. Carter. Proceedings of the Human Factors Society 36th Annual Meeting, 1992.

Invited Participant: Workshop on Human Factors Research in Highway Safety, April 1-3, 1992. Washington, DC: National Academy of Sciences, Transportation Research Board.

"Guide Sign Effectiveness Review: An Assessment for the State of Maryland." March 1992.

"Simulator Technology: Analysis of Applicability to Motor Vehicle Travel." Collaborative author and Editor. *Transportation Research Circular Number 388*. Washington, DC: National Research Council/TRB, February 1992.

"Guidelines for the Review of Advanced Controls and Displays," with J.M. O'Hara. In *Transactions of the Nineteenth Water Reactor Safety Meeting*, - NUREG/CP-0118, October 1991, pp. 11-9, 11-10.

Invited Participant: Workshop on Driver Vision Standards and Testing, October 4-5, 1991. Toronto, Ontario: Canada. Canadian Council of Motor Transport Administrators.

"Are We Training Operators Upside Down?" In *Proceedings of the Ninth Symposium on the Training of Nuclear Facility Personnel*, Denver, Colorado, April 14-18, 1991. Oak Ridge, Tennessee: Oak Ridge National Laboratory Report Number 9104135, pp. IV-B.1.1 - IV-B.1.12.

"The Development of Human Factors Review Criteria for Future Nuclear Power Plant Control Rooms," with J. O'Hara and J. Persensky. *Conference Record 1990 IEEE Nuclear Science Symposium*. Arlington, Virginia, 1990, pp. 909-913.

"Man-in-the-Loop Simulation in the Nuclear Industry: How Did We Get Here - Where Are We Headed?," Invited Keynote Address to The Society for Computer Simulation, Eastern Simulation Conference, Orlando, Florida, 1988.

"Operational Assessment of Simulator Fidelity in the Nuclear Industry," with C. Plott and K.R. Laughery. *Proceedings of the 32nd Meeting of the Human Factors Society*, Los Angeles, 1988.

"Evaluation Procedure for Simulation Facilities Certified Under 10 CFR 55," with C. Plott, K. Laughery and B. Gore. Washington, DC: U.S. Nuclear Regulatory Commission, *NUREG-1258*, 1987.

"Answers to Questions at Public Meetings Regarding Implementation of Title 10, Code of Federal Regulations, Part 55 on Operators' Licenses." Washington, DC: U.S. Nuclear Regulatory Commission, *NUREG-1262*, 1987.

"Using Simulators as Examination Tools." Paper presented at the Third IEEE Conference on Human Factors and Power Plants, Monterey, California, 1985.

"Adverse Highway Safety Consequences of New Technology," in *Ergonomics International* 1985, Edited by I.D. Brown, et. al. London: Taylor & Francis, 1985, 517-519.

"Federal Railroad Administration Experience and Rulemaking Activities with Regard to Fitness for Duty." Report to the Chairman and the Commissioners, U.S. Nuclear Regulatory Commission, 1985.

"The Future of Nuclear Power Plant Simulation in the United States," pp. 338-349, in Walton, D.G., *Simulation for Nuclear Reactor Technology*. Cambridge: Cambridge University Press, 1984.

Chair, "Transportation Safety," 27<sup>th</sup> Meeting of the Human Factors Society, Norfolk, Virginia, 1983.

"The Use of New Technologies for Visual Simulation." Invited Workshop. Washington, DC: Transportation Research Board, 1983.

"Electronic Advertising Near Highways: The Concern for Traffic Safety." *Public Roads*, 45(1), 1981.

Chair, "Performance and Vision." 24<sup>th</sup> Meeting of the Human Factors Society, Los Angeles, 1980.

"The Use and Abuse of Simulators in Environmental and Highway Design." Paper presented at the 24<sup>th</sup> Annual Meeting of the Human Factors Society, Los Angeles, 1980.

"The Highway Environmental Simulator, A White Paper." U.S. Department of Transportation, Federal Highway Administration, Highway Aesthetics Laboratory, 1980.

*Safety and Environmental Design Considerations in the Use of Commercial Electronic Variable Message Signage*, with R.D. Netherton. Washington: U.S. Department of Transportation, 1980.

"Functions and Program of the FHWA Highway Aesthetics Laboratory." U.S. Department of Transportation, Federal Highway Administration, Washington, DC, 1980.

"Effects of Environmental Transitions on Highway Tunnel Operations and Safety." Paper presented at the U.S. Department of Transportation Conference on Research and Development in Underground Construction and Tunneling, Reston, Virginia, 1980.

"Reduced Visibility on the Highway: A Pervasive Problem Receiving International Attention." *Transportation Research Circular 193*, 1978.

"The Escalating War on Reduced Visibility." *Public Roads*, 41(3), 1977.

"The Computer Generation: Options, At What Cost?" in R.E. Granda and J.M. Finkelman, eds., *The Role of Human Factors in Computers*. Proceedings of a Symposium Co-Sponsored by the Metropolitan Chapter of the Human Factors Society and Baruch College, 1976.

"Unobtrusive Measurement in Highway and Pedestrian Safety Research." Paper presented at the annual meeting of the American Psychological Association, Sponsored by Division 21, 1976.

"Remedial Aids to Deal with Driving in Reduced Visibility Caused by Adverse Weather," in *Adverse Weather, Reduced Visibility, and Road Safety*. Paris: Organization for Economic Co-Operation and Development (OECD), 1976.

"Contribution of Edge Striping to Accident Reduction," with J. True. U.S. Department of Transportation, Federal Highway Administration, 1973.

"Crew Systems Input - Apollo-16 Post-Flight Eval.," Grumman Aerospace Corp. LMO-480-888, 1972.

"Displays and Controls Subsystem, Space Shuttle Program," Grumman Aerospace Corp., 1972.

"Apollo 13 Debriefing Summary," with B. Kram, Grumman Aerospace Corp. LMO-480-563, 1970.

"Use of Crosspointers and Attitude Error Needles for Nulling of Horizontal Velocities at LM Touchdown," Grumman Aerospace Corp. LMO-480-810, 1970.

"Summary Recommendations of Evaluation of Rangefinder Device Proposed for Use on the Lunar Surface," with V. Gallagher, Grumman Aerospace Corp. LMO-480-736, 1970.

# EXHIBIT B

## REFERENCES

1. Author (2003). *Manual on Uniform Traffic Control Devices for Streets and Highways*. Washington, DC: U.S. Department of Transportation, Federal Highway Administration.
2. McKnight, J., and McKnight, A.S. (1991). *The Effect of Cellular Phone Use Upon Driver Attention*. Landover, MD: National Public Services Research Institute.
3. Strayer, D.L., Drews, F.A., & Johnston, W.A. (2003). "Cell Phone-Induced Failures of Visual Attention During Simulated Driving," *Journal of Experimental Psychology: Applied*, 9(1), 23-32.
4. Wierwille, W. W., Antin, J. F., Dingus, T. A., & Hulse, M. C. (1988). Visual attentional demand of an in-car navigation display system. In A. G. Gale, M. H. Freeman, C. M. Haslegrave, P. Smith, & S. P. Taylor (Eds.), *Vision in Vehicles II* (pp. 307-316). Amsterdam: North Holland Press.
5. Gellatly, A. W., & Kleiss, J. A. (2000). Visual attention demand evaluation of conventional and multifunction in-vehicle information systems. In *Proceedings of the IEA 2000/HFES 2000 Congress*, 3, 282-285. Santa Monica, CA: Human Factors and Ergonomics Society.
6. Dewar, R., & Olson, P. (2007). *Human Factors in Traffic Safety, Second Edition*. Tucson, AZ: Lawyers and Judges Publishing Company.
7. Shinar, D. (2007). *Traffic Safety and Human Behavior*. Amsterdam, The Netherlands: Elsevier
8. Wachtel, J. and Netherton, R. (1980). *Safety and Environmental Design Considerations in the Use of Commercial Electronic Variable-Message Signage*. Report No. FHWA-RD-80-051. Washington, D.C: Federal Highway Administration.
9. Farbry, J., Wochinger, K., Shafer, T., Owens, N, and Nedzesky, A. (2001). *Research review of potential safety effects of electronic billboards on driver attention and distraction (Final Report)*. Washington, DC: U.S. Department of Transportation, Federal Highway Administration, Human Centered Systems Team..
10. Bergeron, J. (1996). "An Evaluation of the Influence of Roadside Advertising on Road Safety." *Document Prepared for the Ministere des Transports, Government of Quebec*.
11. Wallace, B. (2003). "External-to-vehicle driver distraction." *Research Findings No.168/2003, Scottish Executive Social Research, Development Department Research Programme*.

12. Young, K., & Regan, M. (2003). "Road Safety Implications of Driver Distraction," *Australian Road Safety Handbook, Vol. 2*. Sydney: Austroads.
13. Stutts, J.C., Reinfurt, D.W., Staplin, L., & Rodgman, E.A. (2001) *The Role of Driver Distraction in Traffic Crashes*. Washington, DC: AAA Foundation for Traffic Safety.
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# EXHIBIT C

## APPENDIX 4 - MEASURED SIGN BRIGHTNESS AT NIGHT

As discussed in Section 6.2, these brightness measurements present the relative brightness levels of the measured signs at night. They do not represent actual luminance values, which are the most appropriate measure to use but require the use of complex and specialized equipment. Nonetheless the measurements below are presented on an interval scale, indicating that the distance between two adjacent values is consistent across the entire scale.

Sign Type	Brightness Values	Note
Urban panel	14.5 – 15.5 (Avg. = 15.0)	
LCD video 1	14.0 – 15.5 (Avg. = 14.75)	
LCD video 2	14.0 – 17.3 (Avg. = 15.65)	
PPT 1	12.3 – 13.3 (Avg. = 12.8)	Street face
PPT 1	14.6 – 15.0 (Avg. = 14.8)	Facing southbound traffic
PPT 2	15.5 – 16.5 (Avg. = 16.0)	Street face
PPT 2	14.3 – 15.0 (Avg. = 14.65)	Facing northbound traffic
Fuel Sign 1	13.0 – 13.3 (Avg. = 13.15)	
Fuel Sign 2	13.3 – 14.0 (Avg. = 13.65)	
Scroller Inside Shelter	16.5, 14.5 (Avg. = 15.5)	2 panels
Scroller Outside Shelter	14.3, 16.3, 17.0 (Avg. = 15.87)	3 panels
Newsstand large sign	12.0 – 14.0 (Avg. = 13.0)	Street face
Newsstand small sign	13.3 – 14.0 (Avg. = 13.65)	Facing traffic

An inspection of the table reveals that each of the two Fuel signs was lower in average brightness than all but two of the city sanctioned signs. In addition, the range (from the dimmest to the brightest) of display brightness was far greater for the City sanctioned signs as a whole (from a low value of 12.0 to a high of 17.0) than it was for the Fuel signs (which ranged from 13.0 to 14.0).